

25X1

TOP SECRET

3 JUL 1963 HFS

CS

AGT

25X1

TOP SECRET

(OUT 51422)

25X1

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THE FOLLOWING TECHNICAL INFORMATION NECESSARY FOR THE
REDUCTION OF QUANTITATIVE DATA OBTAINED FROM PHOTOGRAPHY OF MISSION
9056 IS FORWARDED FOR YOUR INFORMATION.

A. THIS PHOTOGRAPHY INVOLVES THE USE OF EIGHT CAMERAS:
TWO MAIN CAMERAS, FOUR HORIZON CAMERAS, STELLAR CAMERA AND A INDEX
CAMERA.

B. OPERATIONAL FOCAL LENGTHS

	FWD UNIT	AFT UNIT
(1) MAIN LENS	609.625 MM	609.704 MM
(2) PORT HORIZON LENS	89.0 MM	88.9 MM
(3) STARBOARD HORIZON LENS	89.0 MM	89.1 MM
(4) STELLAR CAMERA	83.71 MM	
(5) INDEX CAMERA	38.45 MM	

1963 JUL 3 17 43Z

DEFINITION: "OPERATIONAL FOCAL LENGTH" IS DEFINED AS THE DISTANCE
FROM THE MAIN LENS NODAL POINT TO THE FILM SURFACE AS MEASURED
ON THE LENS BENCH, AND THE DATA REDUCED FOR A VACUUM CONDITION.
(OPERATIONAL FOCAL LENGTH IS EQUIVALENT FOCAL LENGTH CORRECTED
FOR ENVIRONMENT.)

C. LENS DISTORTION (PIN CUSHION)

	FWD UNIT	AFT UNIT
(1) MAIN LENS		
3 DEGREES	.002 MM	.002 MM
2 DEGREES	.001 MM	.002 MM

Declassification Review by NGA/DoD

25X1

TOP SECRET

GROUP 1
Excluded from automatic
downgrading and
declassification

25X1

1 DEGREES	.000 MM	.000 MM
0 DEGREES	.000 MM	.000 MM
359 DEGREES	.000 MM	.000 MM
358 DEGREES	.001 MM	.001 MM
357 DEGREES	.002 MM	.002 MM

(2) PORT HORIZON CAMERA

(RADIAL DISTORTION)

10 DEGREES	.001 MM	.005 MM
20 DEGREES	.023 MM	.035 MM

(TANGENTIAL DISTORTION)

MAXIMUM VECTOR	.010 MM	.008 MM
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(3) STARBOARD HORIZON CAMERA

(RADIAL DISTORTION)

10 DEGREES	.006 MM	.003 MM
20 DEGREES	.021 MM	.034 MM

(TANGENTIAL DISTORTION)

MAXIMUM VECTOR	.008 MM	.003 MM
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D. DEPRESSION ANGLES OF HORIZON CAMERAS RELATIVE TO NOMINAL
MAIN CAMERA.

(1) FWD UNIT

A. PORT HORIZON CAMERA - 14 DEGREES 45' 35"

B. STARBOARD HORIZON CAMERA - 15 DEGREES 01' 28"

(2) AFT UNIT

A. PORT HORIZON CAMERA - 15 DEGREES 07' 19"

B. STARBOARD HORIZON CAMERA - 17 DEGREES 44' 32"

E. FILTER AND EXPOSURE DATA

(1) MAIN CAMERAS	FWD UNIT	AFT UNIT
FILTER	WRATTEN 21	WRATTEN 21
APERTURE	F 3.5	F 3.5
SLIT WIDTH	.200"	.200"
(2) PORT HORIZON CAMERAS		
FILTER	WRATTEN 25	WRATTEN 25
APERTURE	F 6.8	F 6.8
EXPOSURE	1/100 SEC.	1/100 SEC.
(3) STARBOARD HORIZON CAMERAS		
FILTER	WRATTEN 25	WRATTEN 25
APERTURE	F 6.8	F 6.8
EXPOSURE	1/100 SEC.	1/100 SEC.
(4) STELLAR CAMERA		
FILTER	NONE	
APERTURE	F 1.9	
EXPOSURE	2 SEC.	
(5) INDEX CAMERA		
FILTER	WRATTEN 21	
APERTURE	F 4.5	
EXPOSURE	1/500 SEC.	

F. RESOLUTION CAPABILITIES

(1) MAIN LENS

A. FWD UNIT - 161 (L/MM AVG)

1

B. AFT UNIT - 174 (L/MM AVG)

(2) PORT HORIZON CAMERA

A. FWD UNIT - 35.6 (L/MM AVG)

B. AFT UNIT - 38.8 (L/MM AVG)

(3) STARBOARD HORIZON CAMERA

A. FWD UNIT - 36.0 (L/MM AVG)

B. AFT UNIT - 33.3 (L/MM AVG)

(4) INDEX CAMERA - 71 (L/MM AWA)

G. TIMING MARKS

FREQUENCY MARKS WILL APPEAR ON THE FILM. RATE OF TIMING MARKS
WILL BE 200 CYCLES PER SECOND.

H. FILM DATA

1. MAIN CAMERAS - SO 132
2. HORIZON CAMERAS - SO 132
3. STELLAR CAMERA - SO 130/102
4. INDEX CAMERA - SO 130

I. CALIBRATED ANGLES OF CAMERAS

1. CALIBRATED CONVERGENT ANGLE OF MAIN CAMERAS - 29 DEGREES
59.33 MIN.
2. CALIBRATED ANGLE BETWEEN FRAMING AND STELLAR CAMERAS -
NOT AVAILABLE AT THIS TIME.
3. STELLAR

X EQUALS MINUS .045 MM

Y EQUALS PLUS .051 MM

NOTE: VIEWING POSITIVE, EMULSION UP, COORDINATE SYSTEM IS

1

DEFINED AS PLUS "Y" IS IN DIRECTION OF FLIGHT. PLUS "X" TO THE LEFT AND PERPENDICULAR TO LINE OF FLIGHT.

4. INDEX

X EQUALS MINUS .019 MM

Y EQUALS MINUS .018 MM

NOTE: VIEWING POSITIVE, EMULSION UP, PLUS "X" IN DIRECTION OF FLIGHT AND MINUS "Y" TO THE RIGHT AND PERPENDICULAR TO DIRECTION OF FLIGHT.

J. IMAGE MOTION COMPENSATION DATA

1. RAMP DATA (30 MINUTE DURATION)

RAMP NO. 3

FWD UNIT	BEGINNING	END
CYCLE PERIOD (SEC)	4.74	2.49
IMC RATE (" / SEC)	.427	.813
SCAN RATE (" / SEC)	31.81	60.56

AFT UNIT

CYCLE PERIOD (SEC)	4.69	2.51
IMC RATE (" / SEC)	.431	.806
SCAN RATE (" / SEC)	32.15	60.08

RAMP NO. 8

FWD UNIT

CYCLE PERIOD (SEC)	5.03	2.49
IMC RATE (" / SEC)	.402	.813
SCAN RATE (" / SEC)	29.98	60.56

AFT UNIT

CYCLE PERIOD (SEC)	4.98	2.51
IMC RATE ("/SEC)	.406	.806
SCAN RATE ("/SEC)	30.28	60.08

NOTE: V/H RAMP 7 DATA TO FOLLOW ASAP

RAMP 3 PASSES

1A1 2D1 5D1

2A1 4D1 5D2

2A2 5M1

RAMP 8 PASSES

7D1 14A1 23D1 24D1 31A1

9D1 14D1 23D2 25D1

9D2 19D1 23D3 25D2

RAMP 7 PASSES

33A1 38D1 47A1 54D2 65A1

34A1 38D2 47A2 55D1 65A2

34D1 39D1 49A1 55D2

35D1 39D2 49A2 56D1

35D2 40D1 50A1 57D1

37D1 41D1 52D1 57D2

37D2 44A1 54D1 64A1

K. PROGRAM TIME DATA

PASS	CAMERA	CAMERA ON TIME	PROGRAM ON TIME	PROGRAM
---	-----	(ZEBRA TIME)	UP RAMP	DURATION
		DAY HOUR MIN	(SEC)	(SEC)

1A1	FWD	27	01	49	376	119
1A1	AFT	27	01	49	376	119
2A1	FWD	27	03	19	381	198
2A1	AFT	27	03	19	381	198
2A2	FWD	27	03	24	637	108
2A2	AFT	27	03	24	637	108
2D1	FWD	27	03	32	1132	107
2D1	AFT	27	03	32	1132	107
4D1	FWD	27	06	33	1036	101
4D1	AFT	27	06	33	1036	101
5M1	FWD	27	08	00	822	105
5M1	AFT	27	08	00	822	105
5D1	FWD	27	08	10	1433	185
5D1	AFT	27	08	10	1433	185
5D2	FWD	27	08	22	2129	124
5D2	AFT	27	08	22	2129	124
7D1	FWD	27	11	09	1428	248
7D1	AFT	27	11	09	1428	248
9D1	FWD	27	14	11	1513	171
9D1	AFT	27	14	11	1513	171
9D2	FWD	27	14	16	1781	111
9D2	AFT	27	14	16	1781	111
14A1	FWD	27	21	31	742	93

14A1	AFT	27	21	31	742	93
14D1	FWD	27	21	51	950	114
14D1	AFT	27	21	51	1950	114
19D1	FWD	28	05	15	1443	113
19D1	AFT	28	05	15	1443	113
23D1	FWD	28	11	14	1225	172
23D1	AFT	28	11	14	1225	172
23D2	FWD	28	11	18	1481	100
23D2	AFT	28	11	18	1481	100
23D3	FWD	28	11	20	1616	176
23D3	AFT	28	11	20	1616	176
24D1	FWD	28	12	45	1286	426
24D1	AFT	28	12	45	1286	426
25D1	FWD	28	14	19	1460	311
25D1	AFT	28	14	19	1460	311
25D2	FWD	28	14	26	1880	144
25D2	AFT	28	14	26	1880	144
31A1	FWD	28	23	06	520	99
31A1	AFT	28	23	06	520	99
33A1	FWD	29	02	07	576	130
33A1	AFT	29	02	07	576	130
34A1	FWD	29	03	38	572	311
34A1	AFT	29	03	38	572	311

34D1	FWD	29	03	52	1437	87
34D1	AFT	29	03	52	1437	87
35D1	FWD	29	05	21	1322	107
35D1	AFT	29	05	21	1322	107
35D2	FWD	29	05	25	1562	146
35D2	AFT	29	05	25	1562	146
37D1	FWD	29	08	27	1647	115
37D1	AFT	29	08	27	1647	115
37D2	FWD	29	08	30	1841	292
37D2	AFT	29	08	30	1841	292
38D1	FWD	29	09	57	1581	143
38D1	AFT	29	09	57	1581	143
38D2	FWD	29	10	00	1793	111
38D2	AFT	29	10	00	1793	111
39D1	FWD	29	11	27	1587	113
39D1	AFT	29	11	27	1587	113
39D2	FWD	29	11	30	1739	97
39D2	AFT	29	11	30	1739	97
40D1	FWD	29	12	54	1392	514
40D1	AFT	29	12	54	1392	514
41D1	FWD	29	14	28	1602	192
41D1	AFT	29	14	28	1602	192
44A1	FWD	29	18	43	575	164
44A1	AFT	29	18	43	575	164

47A1	FWD	29	23	15	608	98
47A1	AFT	29	23	15	608	98
47A2	FWD	29	23	20	878	103
47A2	AFT	29	23	20	878	103
49A1	FWD	30	02	16	638	119
49A1	AFT	30	02	16	638	119
49A2	FWD	30	02	23	1030	107
49A2	AFT	30	02	23	1030	107
50A1	FWD	30	03	50	792	149
50A1	AFT	30	03	50	792	149
52D1	FWD	30	07	07	1772	157
52D1	AFT	30	07	07	1772	157
54D1	FWD	30	10	05	1634	128
54D1	AFT	30	10	05	1634	128
54D2	FWD	30	10	09	1859	113
54D2	AFT	30	10	09	1859	113
55D1	FWD	30	11	36	1567	128
55D1	AFT	30	11	36	1567	128
55D2	FWD	30	11	39	1750	111
55D2	AFT	30	11	39	1750	111
56D1	FWD	30	13	03	1355	529
56D1	AFT	30	13	03	1355	529
57D1	FWD	30	14	39	1701	111
57D1	AFT	30	14	39	1701	111

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57D2	FWD	30	14	41	1850	97
57D2	AFT	30	14	41	850	97
64A1	FWD	01	00	55	630	225
64A1	AFT	01	00	55	630	225
65A1	FWD	01	02	25	590	183
65A1	AFT	01	02	25	590	183
65A2	FWD	01	02	29	830	108
65A2	AFT	01	02	29	830	108

M. TIME CORRELATION (READINGS IN MILLISECONDS)

PASS	SYSTEM TIME	BINARY CLOCK TIME	DIFFERENCE
09	49818.667	74420.314	
25	50386.272	161387.924	PLUS .005
40	45498.203	242899.869	PLUS .014

T O P S E C R E T

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END OF MESSAGE